

PARTIAL TRANSLATION OF JP 2003-316292 A

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Title of the Invention: DISPLAY APPARATUS

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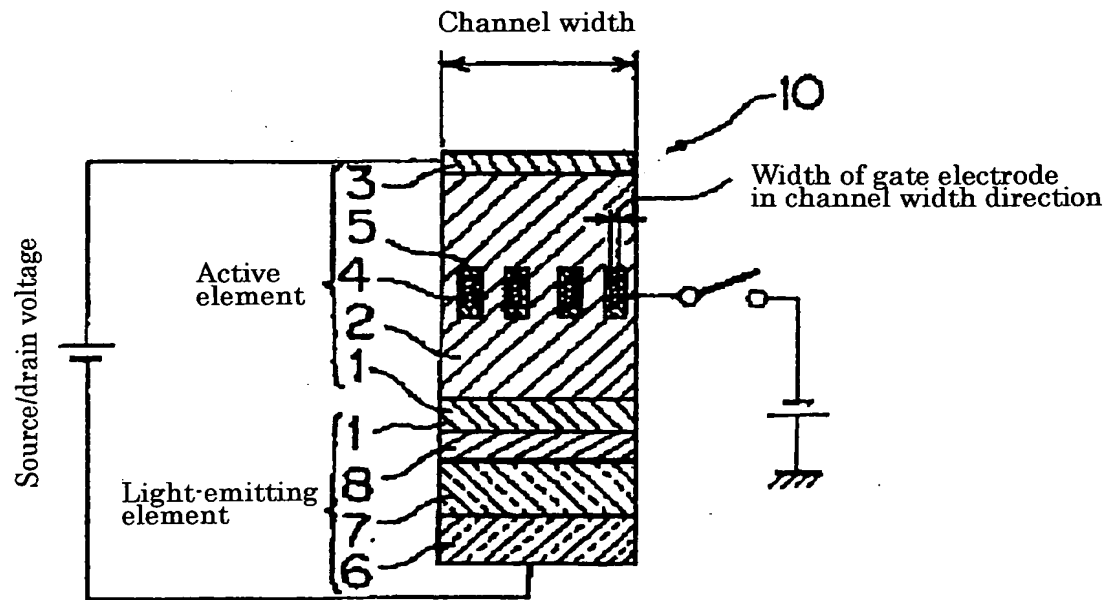
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Applicant: RICOH CO., LTD.

(Page 3, right column, line 46–page 4, left column, line 15)

[0019] As shown in Figures 1, 2, and 4, a display apparatus 10 of the present invention includes a display element (light-emitting element) and an active element on a substrate 6. The active element is formed of a source electrode 1, a semiconductor layer 2, and a drain electrode 3 laminated sequentially. The semiconductor layer includes in its substantially central portion a plurality of rod-like spaced gate electrodes 4 or a single toroidal gate electrode 24 provided substantially in parallel with the source electrode 1 and the drain electrode 3. A current between the source electrode 1 and the drain electrode 3 in the active element flows in a direction substantially vertical to a surface of the substrate 6. In this display apparatus 10, the display element displays gradation by a gate voltage applied to the gate electrode 4 of the active element. The light-emitting element includes the substrate 6, a transparent electrode 7, an organic EL material layer 8, and a negative electrode 1 that also functions as the source electrode 1 of the active element, sequentially, as is well known in the field. In the display apparatus shown in Figure 1, the display element is a liquid crystal cell (liquid crystal display element). However, the display element may be the light-emitting element as shown in Figure 2, or an electrophoretic display element or an FED, which are not shown.

[Fig. 2]



## DISPLAY DEVICE

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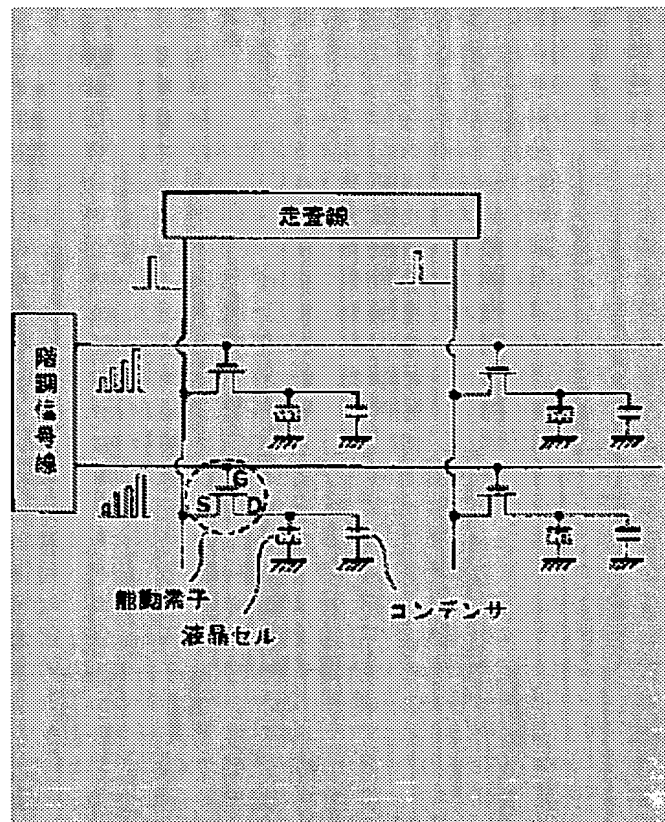
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### Abstract of JP2003316292

**PROBLEM TO BE SOLVED:** To provide a display device improving uniformity of emission intensity by reducing consumption electric power.

**SOLUTION:** In the display device having a display element and an active element on a substrate, the active element is composed of a laminate successively laminating a source electrode, a semiconductor layer and a drain electrode. The semiconductor layer is spaced in the substantially central part, and has a plurality of rod-like gate electrodes or one doughnut-like gate electrode arranged substantially parallel to the source electrode and the drain electrode. In the display device in which current flowing between the source electrode and the drain electrode in the active element flows substantially vertically to a substrate surface, the display element displays gradation by gate voltage applied on the gate electrode of the active element.

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